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PRODUCTIVITY IN GROCERY DISTRIBUTION CENTERS

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TABLE OF CONTENTS

	Page
INTRODUCTION	
Sample Characteristics	2
Productivity Ratios 1979-1980	2
Adjustments 1979-1980	3
Inventory Turns	4
Space Utilization	4
Backhaul	4
Labor Practices and Supervision	5
TABLES	
I. TOTAL WAREHOUSE PRODUCTIVITY	
Comments	6
1. Total Warehouse Productivity Ratios and Throughput	7
2. Truck and Rail Receiving Productivity Ratios	8
3. Storing and Replenishment Productivity Ratios	9
4. Order Selection and Shipping Productivity Ratios	10
5. Geographic Region, Ownership, Size, Items Stocked, Repacks, Inventory Turns, and Number of Employees	11
6. Employee Turnover, Absence, and Contract Provisions	12
7. Supervision, Support Hours, and Recoopering	13
II. TRUCK RECEIVING	
Comments	14
1. Productivity Ratios, Throughput, and Operating Schedule	15
2. Truck Receiving Dock Characteristics, Appointments	16
3. Dock, Pallets, Checking Methods, and Backhaul	17
4. Standards, Incentives, Supervision, Overtime	18
5. Warehouse/Carrier/Shipper Labor Utilization for Unloading and Palletizing	19
III. RAIL RECEIVING	
Comments	20
1. Productivity Ratios, Throughput, and Operating Schedule	21

TABLE OF CONTENTS

		Page
2.	Rail Receiving Dock Characteristics	22
3.	Checking Methods, Standards, and Incentives	23
4.	Supervision and Overtime	24
IV.	STORING: MOVEMENT FROM RECEIVING TO STORAGE	
	Comments	25
1.	Productivity Ratios, Throughput, and Operating Schedule	26
2.	Method of Movement, Storage Location, Aisles, Height, and Capacity Utilization	27
3.	Outside Storage, Standards, Incentives, Supervision, and Overtime	28
V.	REPLENISHMENT: MOVEMENT FROM STORAGE TO SELECTION SLOTS	
	Comments	29
1.	Productivity Ratios, Throughput, and Operating Schedule	30
2.	Replenishment Ratio, Selector Calls, Method, Slotting Priorities	31
3.	Standards, Incentives, Supervision, and Overtime	32
VI.	ORDER SELECTION	
	Comments	33
1.	Productivity Ratios, Throughput, Operating Schedule, and Selection System	34
2.	Selector Loading, Selection Documents, Batch Selection, Bulk Selection, and Warehouse Cutoffs	35
3.	Segregation by Movement, Aisles, Height, Standards, and Incentives	36
4.	Short Interval Scheduling, Supervision and Overtime	37
VII.	SHIPPING PREPARATION	
	Comments	38
1.	Productivity Ratios, Throughput, and Operating Schedule	39
2.	Shipping Dock Characteristics	40
3.	Dock, Trailers, and Checking Method	41
4.	Unitization Loading Method, Orders per Load	42
5.	Customer Profile	43
6.	Standards, Incentives, Supervision, and Overtime	44

INTRODUCTION

The 1980 Grocery Distribution Center Productivity Report continues the series of comparative warehouse efficiency analyses prepared at Cornell University. This Report is intended for use by warehouse managers and others wishing to: (1) evaluate the physical productivity of their dry grocery operations through a comparison to the performance of similar warehouses, and (2) identify those functional areas in the warehouse which are posting the worst performance and hence may require additional attention.

The 1980 Report retains the general format of the 1979 edition with a few minor changes. For confidentiality warehouses are identified by a code number in the Report. The Report has retained the ranking of warehouses based on units per manhour for the total warehouse function and separately for each of six operating areas: truck receiving, rail receiving, storing, replenishment, order selection, and shipping. Warehouses providing incomplete data are listed as an unranked group following the ranked group in each table. The tables include at the bottom a set of summary statistics including the low, median, or midpoint,and high values for the data reported. Added in 1980 are the percent of truck freight received through backhaul and the percent of outbound cases loaded by order selectors. Additionally, slot replenishment has been segregated into planned and unplanned components.

The rankings this year include firms which use automated selection equipment and those repacking some nonfood items, particularly health and beauty aids, and candy and tobacco. When selecting "like" warehouses for comparison, users should note the degree of automation (Table VI.1) and the number of repack items (Table I.5) reported by potential comparison firms.

Sample Characteristics

The warehouses included in this Report have the following characteristics:

Number of warehouses	30
Number of firms	18
Warehouses reported in both 1979 and 1980	20
Warehouse ownership	24 chain owned 5 wholesaler owned 1 retailer owned
Unionization	24 unionized 6 nonunion
Reporting period	4 weeks (October 27th - November 22nd, 1980)

PRODUCTIVITY RATIOS 1979-80

Little change in median overall physical productivity is evident from 1979 to 1980 as can be seen in the summary table. Median or midpoint values are used for comparison to minimize the effect of extreme reported productivity levels. The similarity across the years is most evident when comparing the 20 identical warehouses - those which were reported in both 1979 and 1980. Units or cases are used as a basis for these comparisons because they have proven to be more accurate than tonnage data. For the individual functional areas it is evident that truck receiving, order selection, and shipping productivity declined somewhat. The change in truck receiving may be a result of backhaul changes permitted by truck deregulation in 1980. The sharp apparent differences in storing and replenishment are due to revised reporting procedures and do not necessarily indicate major increases or declines in these functional areas.

When analyzing the extreme values, that is, the reported high and low values, for each functional area in 1980 any uniformity disappears. In order selection for example where the most management attention is directed the reported range in labor productivity is two-and-a-half times, or 99 to 244 units per manhour. In some other areas the reported range is even greater. Even after allowing for differences in automation and repacks and some possible reporting errors the message is clear :

some warehouses are using manpower far more efficiently than others. Those toward the lower end of the range may wish to reexamine their operations to identify potential causes of inefficiency.

PRODUCTIVITY RATIOS 1979 - 1980

	Median Cases Per Man Hour			
	All Warehouses		20 Identical Warehouses	
Function	1979	1980	1979	1980
Total Throughput (direct labor only)	357	353	357	358
Truck Receiving (total labor)	645	462	586	559
Rail Receiving (total labor)	220	196	206	196
Storing (direct labor only)	564	507	475	585
Replenishment (direct labor only)	505	425	522	483
Order Selection (direct labor only)	159	151	150	142
Shipping	826	725	749	725

ADJUSTMENTS 1979 - 1980

This past year was a tumultuous one for the food retailing industry and for distribution centers in particular. Some of the changes, particularly the deregulation of trucking, helped the industry reduce costs through increased backhauls. Other events such as the run up of interest rates raised operating costs by increasing inventory carrying charges. Data in the Report reflect the way in which warehouse managers have adapted to these and other changes in the operating climate. Of course data from any firm should be interpreted with caution as year to year changes may be the result of unknown internal factors. This information may nevertheless help provide some insights. Highlights are listed below.

Inventory Turns

Annualized physical turnover increased from 18.6 turns in 1979 to 20.3 in 1980 for the twenty identical warehouses reporting in 1979 and 1980. Case shipments from these warehouses were virtually identical in these two years. The increased turns were probably a response to higher inventory carrying costs and thus tighter payment terms from suppliers. At the same time storage capacity utilization declined for these warehouses to 87.8% in 1980 from 93.7% in 1979.

Space Utilization

It is interesting to note that in spite of the relatively high utilization rate (relative to planned capacity) of the reporting conventional warehouses they nevertheless contain mostly empty space. With design and handling practices limiting storage density to an average of 3.0 cases per square foot and assuming an average case volume of one cubic foot and storage height of 20.6 feet, the warehouses sampled contained 15% merchandise and 85% air. The costs for warehousing this air are quite high when facility construction, maintenance and temperature control costs along with distances travelled by warehouse personnel are considered. Any increase in storage density could substantially improve warehousing cost efficiency.

Backhaul

The percentage of volume received from backhaul rose from 17.7% in 1979 to 19.1% in 1980 for the twenty identical warehouses. For the total sample backhaul accounted for just over one-fifth of the volume. The expanded use of backhaul was probably a result of legislative changes permitting cost justified allowances. This trend can be expected to continue in spite of some offsetting costs. The savings from backhaul are partially reduced by increased use of warehouse personnel for loading and/or unloading in warehouses which typically rely on carrier personnel to carry out these functions.

Labor Practices and Supervision

Some significant adjustments in hiring and supervising practices were evident in 1980, particularly among the twenty identical warehouses. Overall for those 20 operations throughput productivity remained constant in spite of a 12% decline in the average number of hourly employees from 124 to 109. Much of the decline in numbers was of course made up by increasing overtime. For example 9.0% of the hours worked by order selectors in the identical warehouses were premium hours compared with 6.8% in 1979, an increase of 32%. Conversely, truck receiving overtime actually declined 17% over the same period.

The reduction in the number of supervisions was even greater for the twenty identical firms. The number of employees per supervisor increased from 24.3 to 30.3, a 25% increase. A similar increase was reported in truck receiving, but the level in rail receiving actually declined. There are no obvious indications from the productivity data of any problems caused by increased overtime plus reduced supervision. Managers may nevertheless wish to investigate the impact of increased overtime on costs. Absenteeism, which was up for the identical firms by 6% over 1979, could have contributed to increased overtime.

Although the data received were carefully screened it is possible that errors may be reflected in the reported figures. Comments regarding any errors or the contents of this report are appreciated and should be directed to:

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TABLES I.1 - I.7

TOTAL WAREHOUSE THROUGHPUT

Ranking: Total Throughput data are ranked in descending order by the ratio of total cases handled to direct warehouse hours. Firms which provided incomplete data on volume, or hours of labor in any of the functional areas are not ranked.

Repacks: The number of repack items reported may include some non-grocery products. Product mix as well as service policy relating to partial case shipments can influence labor productivity.

TABLE 1.1

MEASURES OF PRODUCTIVITY
RANKED BY TOTAL WAREHOUSE THROUGHPUT PER DIRECT LABOR HOUR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR DIR LABOR	TONS PER MAN-HOUR DIR LABOR	UNITS PER MAN-HOUR TOT LABOR	TONS PER MAN-HOUR TOT LABOR	UNITS (X1000)	TONS (X1000)
23	1	405	4.59	224	2.54	2274.7	25.77
28	2	394	5.91			5554.0	83.30
19	3	390				6247.3	
21	4	385	4.73	230	2.83	1746.1	21.46
8	5	378	5.54	211	3.10	1196.2	17.55
20	6	360	4.52			4868.5	61.16
1	7	358	4.98			5259.3	73.16
3	8	358	4.77	237	3.16	2014.2	26.86
22	9	354	4.33			2017.9	24.64
18	10	353	2.92			4491.2	37.24
2	11	339	3.42	251	2.53	2232.6	22.50
12	12	339	4.50			4355.7	57.89
31	13	336	4.49	295	3.94	4478.8	59.84
36	14	322	2.11			11441.5	74.95
33	15	322	4.29	189	2.53	1831.7	24.42
13	16	310	3.58	239	2.76	1651.6	19.05
38	17	301	4.12	188	2.56	2997.0	40.98
10	18	298	3.85	203	2.63	4674.5	60.56
14	19	135	1.86	111	1.52	4131.3	56.69
NOT RANKED:							
25	***	****	****	****	****	****	****
16	***	****	****	****	****	****	****
30	***	****	****	****	****	****	****
7	***	****	****	****	****	****	****
32	***	****	****	****	****	****	****
4	***	****	****	****	****	****	****
34	***	****	****	****	****	****	****
35	***	****	****	****	****	****	****
29	***	****	****	****	****	****	****
37	***	****	****	****	****	****	****
11	***	****	****	****	****	****	****
	MEAN	339.	4.14	216.	2.74	3866.5	43.78
	LOW	135.	1.86	111.	1.52	1196.2	17.55
	LO QTR	322.	3.58	189.	2.53	2014.2	24.42
	MEDIAN	353.	4.49	224.	2.63	4131.3	40.98
	HI QTR	378.	4.77	239.	3.10	4868.5	61.16
	HIGH	405.	5.91	295.	3.94	11441.5	83.30

TABLE I.2

MEASURES OF PRODUCTIVITY
RANKED BY TOTAL WAREHOUSE THROUGHPUT PER DIRECT LABOR HOUR

DRY GROCERY

IDENT.	THROUGHPUT		TRUCK RECEIVING			RAIL RECEIVING		
	RANK	UNITS PER MAN-HOUR DIR LABOR	RANK	CASES PER MAN-HOUR TOT LABOR	TONS PER MAN-HOUR TOT LABOR	RANK	CASES PER MAN-HOUR TOT LABOR	TONS PER MAN-HOUR TOT LABOR
23	1	405	22	341	4.63	3	360	5.91
28	2	394	7	744	11.15	8	264	3.95
19	3	390	3	1144		2	370	
21	4	385	14	462	8.09	17	162	2.42
8	5	378	17	435	6.38	16	163	2.50
20	6	360	9	702	9.31	13	198	2.70
1	7	358	26	267	3.90	12	201	2.63
3	8	358	10	672	9.30	22	127	1.76
22	9	354	23	304	4.15	20	143	2.04
18	10	353	2	1208	16.29	24	107	1.52
2	11	339	8	704	7.11	4	357	3.61
12	12	339	12	559	6.96	14	196	1.94
31	13	336	20	383	5.08	9	224	2.74
36	14	322	5	923	11.49	21	141	1.94
33	15	322	19	389	5.01	15	183	2.51
13	16	310	16	441	6.02	18	153	2.15
38	17	301	18	434	5.93	10	207	3.01
10	18	298	15	453	5.47	23	121	1.81
14	19	135	21	359	4.71	7	295	3.63
NOT RANKED:								
25	***	****	11	653	7.63	5	310	3.63
16	***	****	***	****	****	26	86	0.98
30	***	****	13	528	10.25	27	57	0.77
7	***	****	25	277	0.29	***	****	****
32	***	****	***	****	****	***	****	****
4	***	****	4	1105	5.73	19	148	2.56
34	***	****	24	302	3.77	25	94	1.18
35	***	****	27	198	2.02	1	450	7.12
29	***	****	***	****	****	***	****	****
37	***	****	1	1556		6	301	
11	***	****	6	787	10.72	11	207	2.94
	MEAN	339.		605.	6.86		208.	2.72
	LOW	135.		198.	0.29		57.	0.77
	LO QTR	322.		359.	4.63		141.	1.81
	MEDIAN	353.		462.	6.02		196.	2.51
	HI QTR	378.		744.	9.31		295.	3.61
	HIGH	405.		1556.	16.29		450.	7.12

TABLE I.3

MEASURES OF PRODUCTIVITY
RANKED BY TOTAL WAREHOUSE THROUGHPUT PER DIRECT LABOR HOUR

DRY GROCERY

IDENT.	THROUGHPUT RANK	THROUGHPUT UNITS PER MAN-HOUR DIR LABOR	STORING RANK	STORING CASES PER MAN-HOUR DIR LABOR	STORING TONS PER MAN-HOUR DIR LABOR	REPLENISHMENT RANK	REPLENISHMENT CASES PER MAN-HOUR DIR LABOR	REPLENISHMENT TONS PER MAN-HOUR DIR LABOR
23	1	405	9	603	8.39	6	581	5.84
28	2	394	1	2546	38.18	12	405	6.07
19	3	390	11	595		16	324	
21	4	385	22	363	6.11	9	483	4.96
8	5	378	3	815	12.02	11	408	5.95
20	6	360	8	607	8.11	8	500	5.68
1	7	358	2	972	13.92	1	1035	14.08
3	8	358	20	417	5.78	2	824	10.36
22	9	354	17	432	5.95	3	722	7.71
18	10	353	12	585	7.90	5	581	3.38
2	11	339	13	546	5.51	19	183	1.84
12	12	339	15	482	5.70	10	425	6.06
31	13	336	10	597	7.80	17	305	4.14
36	14	322	16	447	5.67	18	255	0.46
33	15	322	23	360	4.71	15	344	4.64
13	16	310	7	627	8.60	4	589	5.92
38	17	301	21	381	5.23	14	358	4.88
10	18	298	18	428	5.36	13	402	5.33
14	19	135	27	130	1.69	20	98	1.38
NOT RANKED:								
25	***	****	19	426	4.98	***	****	****
16	***	****	4	814	9.18	***	****	****
30	***	****	24	342	5.98	7	554	7.47
7	***	****	5	682		***	****	****
32	***	****	***	****	****	***	****	****
4	***	****	26	193	1.23	***	****	****
34	***	****	28	126	1.58	***	****	****
35	***	****	25	225	2.57	***	****	****
29	***	****	***	****	****	***	****	****
37	***	****	6	673		***	****	****
11	***	****	14	507	6.95	***	****	****
	MEAN	339.		569.	7.56		469.	5.59
	LOW	135.		126.	1.23		98.	0.46
	LO QTR	322.		381.	4.98		344.	4.14
	MEDIAN	353.		507.	5.95		425.	5.68
	HI QTR	378.		627.	8.39		581.	6.07
	HIGH	405.		2546.	38.18		1035.	14.08

TABLE I.4

MEASURES OF PRODUCTIVITY
RANKED BY TOTAL WAREHOUSE THROUGHPUT PER DIRECT LABOR HOUR

DRY GROCERY

IDENT.	THROUGHPUT RANK	THROUGHPUT UNITS PER MAN-HOUR DIR LABOR	ORDER SELECTION RANK	ORDER SELECTION CASES PER MAN-HOUR DIR LABOR	ORDER SELECTION TONS PER MAN-HOUR DIR LABOR	SHIPPING RANK	SHIPPING CASES PER MAN-HOUR TOT LABOR	SHIPPING TONS PER MAN-HOUR TOT LABOR
23	1	405	8	181	1.82	17	433	4.35
28	2	394	16	142	2.14	5	959	14.39
19	3	390	12	161		12	725	
21	4	385	7	191	1.96	4	1016	10.44
8	5	378	18	140	2.05	3	1308	19.11
20	6	360	15	148	1.69	9	840	11.47
1	7	358	17	141	1.91	22	249	3.38
3	8	358	14	151	1.90	11	765	10.60
22	9	354	10	177	1.89	18	427	5.49
18	10	353	6	201	1.17	20	326	1.90
2	11	339	19	140	1.41	15	594	5.97
12	12	339	20	139	1.98	16	545	7.76
31	13	336	13	161	2.18	7	878	11.90
36	14	322	4	221	0.40	21	280	0.45
33	15	322	11	162	2.19	19	408	5.50
13	16	310	26	115	1.15	2	1411	14.67
38	17	301	25	118	1.61	8	875	11.93
10	18	298	21	136	1.79	10	798	10.56
14	19	135	27	104	1.47	24	101	1.42
NOT RANKED:								
25	***	****	5	216	2.53	1	1419	16.59
16	***	****	24	124	1.76	***	****	****
30	***	****	1	244	3.30	***	****	****
7	***	****	3	227	3.63	6	954	15.27
32	***	****	28	99	1.35	14	619	8.43
4	***	****	22	131	1.75	13	622	6.20
34	***	****	***	****	****	***	****	****
35	***	****	2	227	2.66	***	****	****
29	***	****	9	180	2.91	***	****	****
37	***	****	23	127		***	****	****
11	***	****	***	****	****	23	138	1.92
	MEAN	339.		161.	2.10		695.	8.68
	LOW	135.		99.	0.40		101.	0.45
	LO QTR	322.		136.	1.61		427.	4.35
	MEDIAN	353.		151.	1.90		725.	8.43
	HI QTR	378.		191.	2.19		954.	11.93
	HIGH	405.		244.	6.23		1419.	19.11

TABLE I.5

WAREHOUSE CHARACTERISTICS
RANKED BY TOTAL WAREHOUSE THROUGHPUT PER DIRECT LABOR HOUR

DRY GROCERY

IDENT.	THROUGHPUT RANK	THROUGHPUT UNITS PER MAN-HOUR DIR LABOR	REGION	WAREHOUSE OWNERSHIP	FLOOR AREA UTILIZED (X1000 SQ. FT.)	TOTAL ITEMS STOCKED	REPACK ITEMS	PHYSICAL INVENTORY TURNOVER (4 WEEKS)	EMPLOYEES HR.	EMPLOYEES SUP.
23	1	405	S	RETAIL	212	6580	823	1.16	64	6
28	2	394	MW	RETAIL	342	4902	0	0.93	122	8
19	3	390	NE	RETAIL	332	4912	528	0.94	158	8
21	4	385	S	RETAIL	174	6500	950	1.63	44	6
8	5	378	MW	RETAIL	84	4276	423	1.40	30	3
20	6	360	MW	RETAIL	251	4957	651	1.54	112	7
1	7	358	W	RETAIL	350	3600	0		135	5
3	8	358	S	RETAIL	170	4719	407	0.99	65	7
22	9	354	S	RETAIL	118	5600	700	1.66	55	4
18	10	353	NE	RETAIL	240	5660	793	1.48	116	8
2	11	339	NE	RETAIL	30	6240	840	2.47	61	1
12	12	339	MW	RETAIL	149	3798	0	1.68	84	6
31	13	336	MW	RETAIL	194	3397	0	1.70	97	4
36	14	322	MW	COOP	525	5300	0	1.14	307	29
33	15	322	S	WHOLESALE	127	4569	0	0.91	66	6
13	16	310	NE	RETAIL	128	4797	415	2.48	44	2
38	17	301	NE	RETAIL	209	5281	143	0.90	94	6
10	18	298	NE	RETAIL	268	6280	450	1.11	157	11
14	19	135	NE	RETAIL	293	6800	301	1.90	191	7
NOT RANKED:										
25	***	****	W	RETAIL	360	7149	0	1.97	221	31
16	***	****	MW	RETAIL	261	5397	411	0.84	82	3
30	***	****	S	WHOLESALE	272	5426	0		88	8
7	***	****	S	RETAIL	100	2723	0	0.91	48	6
32	***	****	S	WHOLESALE	166	4700	45		65	4
4	***	****	NE	RETAIL	193	5800	600	1.76	176	12
34	***	****	NE	WHOLESALE		7000	0		60	3
35	***	****	S	WHOLESALE	225	6977	1027		60	7
29	***	****	NE	RETAIL	169	5070	1084	2.58	76	6
37	***	****	NE	RETAIL	400				172	15
11	***	****	NE	RETAIL	350	5663	965	2.87	205	11
	MEAN	339.			231.	5313.	398.	1.54	109.	8.
	LOW	135.			30.	2723.	0.	0.84	30.	1.
	LO QTR	322.			149.	4700.	0.	0.99	61.	4.
	MEDIAN	353.			212.	5300.	411.	1.54	88.	6.
	HI QTR	378.			332.	6280.	793.	1.90	158.	8.
	HIGH	405.			525.	7149.	1084.	2.87	307.	31.

TABLE I.6

WAREHOUSE CHARACTERISTICS
RANKED BY TOTAL WAREHOUSE THROUGHPUT PER DIRECT LABOR HOUR

DRY GROCERY

IDENT.	THROUGHPUT RANK	THROUGHPUT UNITS PER MAN-HOUR DIR LABOR	ANNUAL % EMPLOYEE TURNOVER HR.	ANNUAL % EMPLOYEE TURNOVER SUP.	ABSENCE PERCENT	UNION	JOB ASSIGNMENT	GUARANTEED HRS DAILY	GUARANTEED HRS WEEKLY	DISCIPLINE STEPS TO ENFORCE STDS NUMBER	DISCIPLINE STEPS TO ENFORCE STDS IN CONTRACT
23	1	405	12.5	0.0	2.51	YES	SENIORITY	8.0	40.0	6	NO
26	2	394	68.9	37.5	7.18	YES	SENIORITY	8.0	40.0	4	NO
19	3	390	2.5	12.5	3.65	YES	NON-SENIORITY	8.0		5	NO
21	4	385	4.5	16.7	17.36	YES	SENIORITY	8.0	40.0	6	NO
8	5	378	43.3	0.0	1.55	YES	SENIORITY	8.0	40.0	6	NO
20	6	360	2.7	14.3	5.58	YES	SENIORITY	8.0	40.0	6	YES
1	7	358	4.4	20.0	2.74	YES	SENIORITY			4	YES
3	8	358	20.0	28.6	4.57	YES	SENIORITY	8.0		4	NO
22	9	354	1.8	0.0	2.48	YES	SENIORITY	8.0	40.0	6	NO
18	10	353	5.2	0.0	7.21	YES	SENIORITY			7	NO
2	11	339	1.6	200.0	0.22	YES	SENIORITY	8.0	40.0	3	YES
12	12	339	1.2	16.7	13.89	YES	SENIORITY	8.0	40.0	5	NO
31	13	326	2.1	0.0	4.09	YES	SENIORITY	8.0	40.0	5	YES
36	14	322	33.9	41.4	5.42	YES	SENIORITY		40.0	6	YES
33	15	322	37.9	0.0	0.60	NO				4	
13	16	310	11.4	0.0	3.61	YES	SENIORITY	8.0	40.0	6	NO
38	17	301		33.3	4.60	YES	SENIORITY	8.0	40.0	6	NO
10	18	298	15.9	72.7	3.32	YES	SENIORITY	8.0	40.0	5	NO
14	19	135	5.2	14.3	1.88	YES	SENIORITY	8.0		6	NO
NOT RANKED:											
25	***	****	58.6	25.6	4.69	YES	SENIORITY	8.0	40.0	4	NO
16	***	****	9.8	66.7		YES	SENIORITY	8.0	40.0	6	NO
30	***	****	26.1	25.0		NO				4	
7	***	****	2.1	0.0		NO				3	
32	***	****	38.5	25.0		YES	SENIORITY			3	NO
4	***	****	11.4	16.7		NO				6	
34	***	****	8.3	0.0		NO				4	
35	***	****	46.7	0.0		NO				5	
29	***	****	6.6	0.0		YES	SENIORITY	8.0	40.0	6	YES
37	***	****	15.7	20.0		YES	SENIORITY	8.0		4	NO
11	***	****	17.1	0.0		YES	SENIORITY	8.0	40.0	6	YES
	MEAN	339.	17.8	22.9	4.86			8.0	40.0	5.	
	LOW	135.	1.2	0.0	0.22			8.0	40.0	3.	
	LO QTR	322.	2.7	0.0	2.51			8.0	40.0	4.	
	MEDIAN	353.	11.4	16.7	4.09			8.0	40.0	5.	
	HI QTR	378.	33.9	28.6	5.58			8.0	40.0	6.	
	HIGH	405.	68.9	200.0	17.36			8.0	40.0	7.	

TABLE I.7

WAREHOUSE CHARACTERISTICS
RANKED BY TOTAL WAREHOUSE THROUGHPUT PER DIRECT LABOR HOUR

DRY GROCERY

IDENT.	THROUGHPUT RANK	THROUGHPUT UNITS PER MAN-HOUR DIR LABOR	1ST LINE SUPER	SUPPORT LABOR HOURS - % OF TOTAL HOURS RECOOP	STOCK CONTROL	MAINT.	HOUSE-KEEPING	SECURITY	SUPPORT EMPLOYEE HRS PER SUPER HR.	RECOOP % OF TONNAGE SHIPPED
23	1	405	NONUNION	1.34	6.98	7.43	5.37	0.00	13.4	0.27
28	2	394	NONUNION							0.10
19	3	390	NONUNION							
21	4	385	NONUNION	1.90	0.11	6.22	8.60	1.12	6.5	0.10
8	5	378	NONUNION	0.71	0.71	5.66	8.48	5.30	29.5	
20	6	360	NONUNION						9.9	0.47
1	7	358	NONUNION						7.0	2.60
3	8	358	NONUNION	3.10	0.61	2.91	9.89	0.00	5.2	0.16
22	9	354	NONUNION						22.3	0.07
18	10	353	NONUNION							0.17
2	11	339	NONUNION	1.84	0.45	8.99	5.40	0.00	74.2	0.15
12	12	339	NONUNION							0.05
31	13	336	NONUNION	0.37	0.53	0.00	0.00	0.07	1.2	0.08
36	14	322	NONUNION							1.07
33	15	322		2.96	3.32	4.02	7.16	0.41	4.8	0.40
13	16	310	NONUNION	0.55	0.00	4.64	3.59	0.00	19.0	0.11
38	17	301	NONUNION	0.86	0.00	2.50	9.01	8.41	8.3	0.21
10	18	298	NONUNION	0.54	2.11	6.27	7.05	0.70	8.0	
14	19	135	NONUNION	0.47	0.41	3.74	3.77	0.00	9.0	0.09
NOT RANKED:										
25	***	****	BOTH	1.31	4.02	2.17	11.32	3.70	9.0	
16	***	****	NONUNION							0.10
30	***	****							6.0	
7	***	****								
32	***	****	NONUNION							
4	***	****							7.1	
34	***	****								
35	***	****								
29	***	****	NONUNION							
37	***	****	NONUNION							
11	***	****	NONUNION							
	MEAN	339.		1.33	1.60	4.55	6.64	1.64	14.1	0.36
	LOW	135.		0.37	0.00	0.00	0.00	0.00	1.2	0.05
	LO QTR	322.		0.55	0.41	2.91	5.37	0.00	6.0	0.09
	MEDIAN	353.		1.31	0.61	4.64	7.16	0.41	8.3	0.15
	HI QTR	378.		1.90	3.32	6.27	9.01	3.70	19.0	0.40
	HIGH	405.		3.10	6.98	8.99	11.32	8.41	74.2	2.60

TABLES II.1 - II.5

TRUCK RECEIVING

Ranking: Truck receiving data are ranked by the ratio of total cases received by truck (carrier and backhaul) to total labor hours (direct and checking).

Unlaoding by carriers: In the identical warehouses the proportion of unloading done by carriers dropped from 48% to 43% in 1979-1980. This may be a result of the more concise definition of unloading responsibilities included in the truck deregulation bill of 1980. Carriers unloaded 50% of the freight which they delivered to the sample warehouses.

TABLE II.1

TRUCK RECEIVING
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY CASES PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	CASES PER MAN-HOUR TOT LABOR	TONS PER MAN-HOUR TOT LABOR	CASES PER MAN-HOUR DIR LABOR	TONS PER MAN-HOUR DIR LABOR	CASES (X1000)	TONS (X1000)	OPER. SCHEDULE DAYS	OPER. SCHEDULE HOURS
37	1	1556		2670		1193.6		5.0	8.0
18	2	1208	16.29	1208	16.29	713.7	9.63	5.0	12.0
19	3	1144		6177		1068.6		5.0	12.0
4	4	1105	5.73	2794	14.50	857.1	4.45	5.0	8.0
36	5	923	11.49	1403	17.46	2081.4	25.91	5.0	24.0
11	6	787	10.72	1585	21.58	1159.9	15.80	5.0	9.0
28	7	744	11.15	744	11.15	922.8	13.84	5.0	16.0
2	8	704	7.11	1015	10.25	395.7	4.00	5.0	8.0
20	9	702	9.31	938	12.44	738.8	9.80	5.0	16.0
3	10	672	9.30	907	12.56	326.4	4.52	5.0	8.0
25	11	653	7.63	10187	119.08	1670.7	19.53	7.0	24.0
12	12	559	6.96	1065	13.26	677.3	8.43	5.0	8.0
30	13	528	10.25			309.7	6.02	5.0	9.0
21	14	462	8.09	1170	20.51	170.8	3.00	5.0	8.0
10	15	453	5.47	491	5.92	783.5	9.46	5.0	8.0
13	16	441	6.02	830	11.34	306.0	4.18	5.0	8.0
8	17	435	6.38	782	11.48	234.7	3.45	5.0	8.0
38	18	434	5.93	725	9.89	537.8	7.34	5.0	8.0
33	19	389	5.01	1096	14.12	285.7	3.68	5.0	8.0
31	20	383	5.08	432	5.73	708.5	9.39	5.0	24.0
14	21	359	4.71	476	6.24	1081.1	14.19	5.0	8.0
23	22	341	4.63	680	9.26	330.7	4.50	5.0	8.0
22	23	304	4.15	528	7.20	290.3	3.96	5.0	8.0
34	24	302	3.77	609	7.61	448.5	5.61	5.0	8.0
7	25	277	0.29	479	0.51	625.8	0.66	5.0	8.0
1	26	267	3.90	356	5.20	850.9	12.43	5.0	15.0
35	27	198	2.02	198	2.02	597.0	6.08	5.0	8.0
NOT RANKED:									
16	***	****				763.7	8.60	5.0	8.0
32	***	****						5.0	
29	***	****		527		495.0		5.0	8.0
	MEAN	605.	6.86	1521.	15.23	717.3	8.39		
	LOW	198.	0.29	198.	0.51	170.8	0.66		
	LO QTR	359.	4.63	528.	7.20	326.4	4.00		
	MEDIAN	462.	6.02	907.	11.34	677.3	6.08		
	HI QTR	744.	9.31	1403.	14.50	922.8	12.43		
	HIGH	1556.	16.29	10187.	119.08	2081.4	25.91		

TABLE II.2

TRUCK RECEIVING
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY CASES PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	CASES PER MAN-HOUR TOT LABOR	TRUCK RECEIVING DOCK							APPOINTMENTS
			LENGTH (FT)	DEPTH (FT)	% OF WAREHOUSE AREA	DOORS	CASES PER DOOR-HOUR	TONS PER DOOR-HOUR	USED FOR STORAGE	
37	1	1556	200	50	2.50	31	241		NO	YES
18	2	1208	192	80	6.39	17	175	2.36	NO	YES
19	3	1144	848	40	10.20	45	99		YES	YES
4	4	1105	336	46	8.02	18	298	1.54	YES	YES
36	5	923	736			50	87	1.08	NO	YES
11	6	787	376	42	4.51	16	403	5.49	NO	YES
28	7	744	290	45	3.81	23	125	1.88	NO	YES
2	8	704	100	10	3.33	6	412	4.16	NO	YES
20	9	702	292	27	3.14	27	86	1.13	NO	YES
3	10	672	144	15	1.27	11	185	2.57	NO	YES
25	11	653	646	27	4.84	53	47	0.55	NO	YES
12	12	559	247	38	6.31	17	249	3.10	YES	YES
30	13	528	240	50	4.41	19	91	1.76	NO	YES
21	14	462	100	10	0.57	6	178	3.12	NO	YES
10	15	453	522	55	10.70	48	102	1.23	NO	YES
13	16	441	140	49	5.36	13	147	2.01	NO	YES
8	17	435	60	42	3.00	8	183	2.69	NO	YES
38	18	434	143	41	2.80	11	306	4.17	NO	YES
33	19	389	425	40	13.39	26	69	0.88	NO	YES
31	20	383	396	56	11.44	16	92	1.22	YES	YES
14	21	359				38	178	2.33	YES	YES
23	22	341	100	40	1.89	7	295	4.02	NO	YES
22	23	304	132	15	1.69	2	907	12.37	NO	YES
34	24	302	200	40		28	100	1.25	NO	YES
7	25	277	200	40	8.00	13	301	0.32	NO	NO
1	26	267	140	50	2.00	24	118	1.73	NO	YES
35	27	198	420	50	9.33	35	107	1.09	NO	YES
NOT RANKED:										
16	***	****	495	22	4.17	38	126	1.41	YES	YES
32	***	****	230	36	5.00	13			NO	NO
29	***	****	200	20	2.37	9	344		NO	YES
	MEAN	605.	295.	38.	5.20	22.	209.	2.52		
	LOW	198.	60.	10.	0.57	2.	47.	0.32		
	LO QTR	359.	140.	27.	2.50	11.	99.	1.22		
	MEDIAN	462.	230.	40.	4.41	18.	175.	1.88		
	HI QTR	744.	420.	50.	8.00	35.	298.	3.12		
	HIGH	1556.	848.	80.	13.39	53.	907.	12.37		

TABLE II.3

TRUCK RECEIVING
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY CASES PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	CASES PER MAN-HOUR TOT LABOR	RECEIVE & SHIP SAME DOCK	RECEIVE & SHIP SAME TIME	OUT OF PALLETS	CHECKING METHOD CARRIER	CHECKING METHOD BACKHAUL	PERCENT BACKHAUL
37	1	1556	NO		MONTHLY	ITEM	ITEM	31.30
18	2	1208	NO		DAILY	COUNT	COUNT	11.92
19	3	1144	YES	NO	NEVER	ITEM	ITEM	21.99
4	4	1105	YES	NO	WEEKLY	COUNT	COUNT	5.91
36	5	923	YES	YES	MONTHLY	COUNT	COUNT	34.68
11	6	787	YES	NO	MONTHLY	ITEM	ITEM	20.00
28	7	744	NO		NEVER	COUNT	COUNT	22.96
2	8	704	NO		NEVER	ITEM	ITEM	14.01
20	9	702	YES	YES	MONTHLY	ITEM	ITEM	27.64
3	10	672	NO		WEEKLY	ITEM	ITEM	20.90
25	11	653	YES	YES	MONTHLY	ITEM	ITEM	16.68
12	12	559	YES	NO	MONTHLY	ITEM	ITEM	26.44
30	13	528	NO		MONTHLY	ITEM	ITEM	32.05
21	14	462	NO		NEVER	ITEM	ITEM	28.09
10	15	453	NO		MONTHLY	COUNT	COUNT	3.98
13	16	441	YES	NO	NEVER	COUNT	COUNT	8.95
8	17	435	NO		MONTHLY	ITEM	ITEM	23.33
38	18	434	NO		MONTHLY	ITEM	ITEM	21.57
33	19	389	YES	NO	DAILY	ITEM	ITEM	17.28
31	20	383	YES	NO	NEVER	ITEM	ITEM	31.92
14	21	359	NO		MONTHLY	ITEM	ITEM	29.57
23	22	341	NO		MONTHLY	ITEM	ITEM	15.12
22	23	304	NO		NEVER	ITEM	ITEM	18.47
34	24	302	YES	NO	MONTHLY	ITEM	ITEM	11.83
7	25	277	NO		NEVER	COUNT	COUNT	1.54
1	26	267	NO		MONTHLY	ITEM	ITEM	22.34
35	27	198	NO		MONTHLY	ITEM	ITEM	26.78
NOT RANKED:								
16	***	****	NO		MONTHLY	ITEM	ITEM	41.96
32	***	****	YES	NO	MONTHLY	ITEM	ITEM	
29	***	****	NO		MONTHLY	COUNT	SPOT	15.15
	MEAN	605.						20.84
	LOW	198.						1.54
	LO QTR	359.						14.01
	MEDIAN	462.						21.57
	HI QTR	744.						28.09
	HIGH	1556.						41.96

TABLE II.4

TRUCK RECEIVING
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY CASES PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	CASES PER MAN-HOUR TOT LABOR	PERFORMANCE STANDARDS			INCENTIVES	SHOFT INTERVAL SCHED.	EMPLOYEES PER SUPER.	O/T HOURS (% OF TOTAL)
			STANDARDS	ENG. BASED	IN CONTRACT				
37	1	1556	NO			NO	NO	2.4	3.8
18	2	1208	NO			NO	NO	4.5	8.3
19	3	1144	YES	YES	NO	NO		4.7	4.5
4	4	1105	NO			NO	NO	3.2	3.1
36	5	923	YES	NO	NO	NO	YES	4.7	9.7
11	6	787	YES	YES	NO	NO	YES	9.2	0.0
28	7	744	YES	YES	NO	NO	NO	5.2	8.9
2	8	704	YES	NO	NO	YES	NO	16.1	3.6
20	9	702	YES	YES	NO	NO	YES	6.6	15.7
3	10	672	NO			NO	NO	4.9	1.4
25	11	653	NO			NO	NO	5.1	7.3
12	12	559	NO			NO	YES	13.5	13.9
30	13	528	NO			NO		4.5	18.2
21	14	462	NO			NO	NO	2.6	1.1
10	15	453	NO			NO	NO	6.2	3.5
13	16	441	NO			NO	NO	40.9	12.2
8	17	435	NO			NO	NO	4.2	0.0
38	18	434	YES	YES	NO	NO	NO	4.1	7.1
33	19	389	NO			NO	YES	9.2	3.5
31	20	383	YES		YES	YES	YES	16.1	2.4
14	21	359	NO			NO	YES	17.3	6.3
23	22	341	YES	YES	NO	NO	YES	5.9	4.7
22	23	304	NO			NO		7.9	2.1
34	24	302	YES	YES		NO	NO	4.6	11.6
7	25	277	YES			NO		14.1	1.4
1	26	267	NO			NO		28.5	4.6
35	27	198	NO			NO		15.1	4.3
NOT RANKED:									
16	***	****	YES	NO	NO	NO	YES		
32	***	****	YES		NO	NO			
29	***	****	NO			NO	NO		
	MEAN	605.						9.7	6.0
	LOW	198.						2.4	0.0
	LO QTR	359.						4.5	2.4
	MEDIAN	462.						5.9	4.5
	HI QTR	744.						14.1	8.9
	HIGH	1556.						40.9	18.2

TABLE II.5

TRUCK RECEIVING
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY CASES PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	CASES PER MAN-HOUR TOT LABOR	WHO UNLOADS AND PALLETIZES (%) UNLOADING		PALLETIZING		
			CARRIER	WAREHOUSE	CARRIER	SHIPPER	WAREHOUSE
37	1	1556	100	0	100	0	0
18	2	1208	0	100	100	0	0
19	3	1144	100	0	100	0	0
4	4	1105	100	0	100	0	0
36	5	923	11	89	11	89	0
11	6	787	0	100	20	80	0
28	7	744	0	95	55	40	0
2	8	704	0	100	25	75	0
20	9	702	0	85	5	80	0
3	10	672	0	100	34	66	0
25	11	653	90	10	90	10	0
12	12	559	0	100	32	68	0
30	13	528	100	0	100	0	0
21	14	462	100	0	100	0	0
10	15	453	80	20	80	20	0
13	16	441	100	0	100	0	0
8	17	435	90	10	100	0	0
38	18	434	85	15	85	15	0
33	19	389	99	1	99	1	0
31	20	383	0	100	20	80	0
14	21	359	25	75	25	75	0
23	22	341	75	25	75	5	20
22	23	304	0	100	100	0	0
34	24	302	50	50	100	0	0
7	25	277	5	95	5	0	95
1	26	267	90	10	100	0	0
35	27	198	100	0	100	0	0
NOT RANKED:							
16	***	****	0	100	5	0	95
32	***	****	98	2	98	2	0
29	***	****	0	100	100	0	0
	MEAN	605.	50.	49.	69.	24.	7.
	LOW	198.	0.	0.	5.	0.	0.
	LO QTR	359.	0.	1.	25.	0.	0.
	MEDIAN	462.	75.	50.	98.	1.	0.
	HI QTR	744.	100.	100.	100.	68.	0.
	HIGH	1556.	100.	100.	100.	89.	95.

TABLES III.1 - III.4

RAIL RECEIVING

Ranking: Rail receiving data are ranked by the ratio of total cases received from rail cars to total labor hours (direct and checking).

TABLE III.1

RAIL RECEIVING
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY CASES PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	CASES PER MAN-HOUR TOT LABOR	TONS PER MAN-HOUR TOT LABOR	CASES PER MAN-HOUR DIR LABOR	TONS PER MAN-HOUR DIR LABOR	CASES (X1000)	TONS (X1000)	OPER. SCHEDULE DAYS	OPER. SCHEDULE HOURS
35	1	450	7.12	450	7.12	163.7	2.59	5.0	8.0
19	2	370		436		181.2		5.0	8.0
23	3	360	5.91	719	11.81	38.8	0.64	5.0	8.0
2	4	357	3.61	506	5.11	145.8	1.47	5.0	3.0
25	5	310	3.63	368	4.30	198.6	2.32	6.0	8.0
37	6	301		301		208.6		5.0	8.0
14	7	295	3.63	587	7.22	117.4	1.45	5.0	8.0
28	8	264	3.95	264	3.95	192.4	2.89	5.0	8.0
31	9	224	2.74	276	3.38	160.3	1.96	5.0	8.0
38	10	207	3.01	321	4.65	59.3	0.86	5.0	8.0
11	11	207	2.94	323	4.60	182.9	2.60	5.0	8.0
1	12	201	2.63	402	5.25	193.2	2.52	5.0	15.0
20	13	198	2.70	263	3.60	193.8	2.65	5.0	8.0
12	14	196	1.94	232	2.30	216.8	2.15	5.0	8.0
33	15	183	2.51	220	3.03	85.5	1.18	5.0	8.0
8	16	163	2.50	217	3.33	26.1	0.40	5.0	8.0
21	17	162	2.42	277	4.14	62.4	0.93	5.0	8.0
13	18	153	2.15	194	2.74	47.3	0.67	5.0	8.0
4	19	148	2.56	148	2.56	92.7	1.60	5.0	16.0
22	20	143	2.04	203	2.90	76.8	1.10	5.0	8.0
36	21	141	1.94	147	2.02	434.8	5.99	5.0	16.0
3	22	127	1.76	165	2.28	71.6	0.99	5.0	8.0
10	23	121	1.81	131	1.96	147.5	2.20	5.0	8.0
18	24	107	1.52	107	1.52	20.9	0.30	5.0	8.0
34	25	94	1.18	188	2.35	47.1	0.59	5.0	8.0
16	26	86	0.98	86	0.98	152.4	1.73	5.0	8.0
30	27	57	0.77	66	0.89	148.5	2.01	5.0	9.0
NOT RANKED:									
29	***	****		216		164.5		5.0	8.0
7	***	****							
32	***	****						5.0	
	MEAN	208.	2.72	281.	3.76	135.8	1.75		
	LOW	57.	0.77	66.	0.89	20.9	0.30		
	LO QTR	141.	1.81	165.	2.28	62.4	0.86		
	MEDIAN	196.	2.51	263.	3.33	147.5	1.60		
	HI QTR	295.	3.61	368.	4.65	192.4	2.52		
	HIGH	450.	7.12	719.	11.81	434.8	5.99		

TABLE III.2

RAIL RECEIVING
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY CASES PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	CASES PER MAN-HOUR TOT LABOR	RAIL RECEIVING DOCK						
			LENGTH (FT)	DEPTH (FT)	% OF WAREHOUSE AREA	CAR POSITIONS	CASES PER POSITION-HOUR	TONS PER POSITION-HOUR	USED FOR STORAGE
35	1	450	530	20	4.71				NO
19	2	370	272	40	3.27	14	81		YES
23	3	360	100	15	0.71	3	81	1.33	NO
2	4	357	200	10	6.67	8	304	3.07	YES
25	5	310							NO
37	6	301	800	20	4.00				NO
14	7	295							YES
28	8	264	880	25	6.43	15	80	1.20	NO
31	9	224	440	32	7.26	7	143	1.75	NO
38	10	207	124	16	0.95	4	93	1.34	NO
11	11	207	600	14	2.40	11	104	1.48	YES
1	12	201	300	30	2.57	6	107	1.40	NO
20	13	198	630	26	6.52	11	110	1.51	YES
12	14	196	333	22	4.92	5	271	2.69	YES
33	15	183	526	12	4.97	7	76	1.05	YES
8	16	163	420	12	6.01	7	23	0.36	NO
21	17	162	200	10	1.15	5	78	1.16	YES
13	18	153	200	10	1.56	4	74	1.04	YES
4	19	148	614	18	5.57	10	29	0.50	YES
22	20	143							YES
36	21	141	550	38	3.98	10	136	1.87	NO
3	22	127	740	9	3.92	12	37	0.52	YES
10	23	121	1141	18	7.65				NO
18	24	107	210	11	0.96	2	65	0.93	YES
34	25	94	480	30		8	37	0.46	NO
16	26	86	515	41	8.06	10	95	1.08	YES
30	27	57	562	30	6.20	10	83	1.11	YES
NOT RANKED:									
29	***	****	500	15	4.44	6	171		YES
7	***	****							
32	***	****	445	22	5.92	4			YES
	MEAN	208.	474.	21.	4.43	8.	104.	1.29	
	LOW	57.	100.	9.	0.71	2.	23.	0.36	
	LO QTR	141.	272.	12.	2.40	5.	74.	1.04	
	MEDIAN	196.	500.	20.	4.71	7.	83.	1.20	
	HI QTR	295.	614.	30.	6.43	10.	136.	1.51	
	HIGH	450.	1141.	41.	8.08	15.	304.	3.07	

TABLE III.3

RAIL RECEIVING
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY CASES PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	CASES PER MAN-HOUR TOT LABOR	CHECKING METHOD	PERFORMANCE STANDARDS			INCENTIVES	SHORT INTERVAL SCHED.
				STANDARDS	ENG. BASED	IN CONTRACT		
35	1	450	ITEM	NO			NO	
19	2	370	ITEM	YES	YES	NO	NO	
23	3	360	ITEM	YES	YES	NO	NO	YES
2	4	357	ITEM	YES	NO	NO	YES	NO
25	5	310	ITEM	NO			NO	NO
37	6	301	ITEM	YES	YES	NO	NO	YES
14	7	295	ITEM	NO			NO	NO
28	8	264	COUNT	YES	YES	NO	NO	NO
31	9	224	ITEM	YES		YES	YES	YES
38	10	207	ITEM	YES	YES	NO	NO	NO
11	11	207	ITEM	YES	YES	NO	NO	YES
1	12	201	ITEM	YES		YES	NO	
20	13	198	ITEM	NO			NO	NO
12	14	196	ITEM	NO			NO	YES
33	15	183	ITEM	NO			NO	YES
8	16	163	ITEM	NO			NO	NO
21	17	162	ITEM	YES	NO	NO	NO	NO
13	18	153	COUNT	YES	YES	NO	NO	YES
4	19	148	COUNT	NO			NO	NO
22	20	143	ITEM	YES	YES	NO	NO	
36	21	141	COUNT	YES	NO	NO	NO	NO
3	22	127	ITEM	NO			NO	NO
10	23	121	COUNT	YES	NO	NO	NO	NO
18	24	107	COUNT	NO			NO	NO
34	25	94	ITEM	YES	YES		NO	NO
16	26	86	ITEM	YES	NO	NO	NO	NO
30	27	57	ITEM	NO			NO	
NOT RANKED:								
29	***	****	SPOT	NO			NO	NO
7	***	****					NO	
32	***	****	ITEM	YES		NO	NO	

MEAN	208.
LOW	57.
LO QTR	141.
MEDIAN	196.
HI QTR	295.
HIGH	450.

TABLE III.4

RAIL RECEIVING
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY CASES PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	CASES PER MAN-HOUR TOT LABOR	EMPLOYEES PER SUPER.	O/T HOURS (% OF TOTAL)
35	1	450	2.0	0.0
19	2	370	6.1	1.9
23	3	360	2.7	3.7
2	4	357	27.2	4.7
25	5	310	6.4	15.9
37	6	301	4.3	15.7
14	7	295		8.0
28	8	264	4.6	0.0
31	9	224	8.9	12.1
38	10	207	4.8	4.5
11	11	207	5.5	3.0
1	12	201	20.0	5.2
20	13	198	6.1	10.5
12	14	196	7.9	7.0
33	15	183	5.9	2.6
8	16	163	2.7	0.0
21	17	162	2.8	0.8
13	18	153	18.2	3.6
4	19	148	2.6	7.8
22	20	143	9.0	1.3
36	21	141	9.6	0.5
3	22	127	5.6	1.1
10	23	121	10.2	0.0
18	24	107	9.1	5.5
34	25	94	1.6	20.3
16	26	86		2.3
30	27	57	20.1	4.7
NOT RANKED:				
29	***	****		
7	***	****		
32	***	****		
	MEAN	208.	8.2	5.3
	LOW	57.	1.6	0.0
	LO QTR	141.	2.8	1.1
	MEDIAN	196.	6.1	3.7
	HI QTR	295.	9.6	7.8
	HIGH	450.	27.2	20.3

TABLES IV.1 - IV.3

STORING

Ranking: Storing data are ranked by the ratio of total cases moved from truck and rail receiving into storage or selection slots to direct labor hours.

TABLE IV.1 STORING - MOVING STOCK FROM RECEIVING TO STORAGE OR SELECTION SLOTS
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR DIRECT LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR DIR LABOR	TONS PER MAN-HOUR DIR LABOR	UNITS (X1000)	TONS (X1000)	PALLETS (X1000)	UNITS PER PALLET	OPERATING SCHEDULE FROM TRUCK DAYS	FROM TRUCK HOURS	FROM RAIL DAYS	FROM RAIL HOURS
28	1	2546	38.18	1115.1	16.72	27.88	40	5.0	16.0	5.0	16.0
1	2	972	13.92	1269.1	18.17	28.67	44	5.0	15.0	5.0	15.0
8	3	815	12.02	260.8	3.84	5.22	50	5.0	8.0	5.0	8.0
16	4	814	9.18	774.9	8.74	17.14	45	5.0	8.0	5.0	8.0
7	5	682		625.8		11.38	55	5.0	8.0		
37	6	673		1402.2		28.31	50	5.0	8.0	5.0	8.0
13	7	627	8.60	276.5	3.79	6.26	44	5.0	8.0	5.0	8.0
20	8	607	8.11	932.6	12.45	25.49	37	5.0	16.0	5.0	8.0
23	9	603	8.39	385.6	5.36	9.01	43	5.0	8.0	5.0	8.0
31	10	597	7.80	868.8	11.35	30.30	29	5.0	24.0	5.0	8.0
19	11	595		1249.8		31.25	40	5.0	12.0	5.0	8.0
18	12	585	7.90	713.7	9.64	17.84	40	5.0	12.0	5.0	8.0
2	13	546	5.51	541.5	5.47	15.87	34	5.0	8.0	5.0	3.0
11	14	507	6.95	1342.8	18.40	37.83	35	6.0	24.0	5.0	8.0
12	15	482	5.70	840.8	9.96	21.56	39	5.0	8.0	5.0	8.0
36	16	447	5.67	2516.1	31.89	49.55	51	5.0	24.0	5.0	24.0
22	17	432	5.95	367.1	5.05	10.49	35	5.0	8.0	5.0	8.0
10	18	428	5.36	931.0	11.66	23.22	40	5.0	16.0	5.0	16.0
25	19	426	4.98	1869.3	21.85	31.92	59	7.0	24.0	6.0	8.0
3	20	417	5.78	398.0	5.51	11.37	35	5.0	8.0	5.0	8.0
38	21	381	5.23	597.2	8.20	14.22	42	5.0	8.0	5.0	8.0
21	22	363	6.11	302.6	5.10	8.65	35	5.0	8.0	5.0	8.0
33	23	360	4.71	371.2	4.86	14.85	25	5.0	8.0	5.0	8.0
30	24	342	5.98	594.2	10.40	13.21	45	5.0	9.0	5.0	9.0
35	25	225	2.57	760.8	8.67	42.38	18	5.0	8.0	5.0	8.0
4	26	193	1.23	949.9	6.05	20.46	46	5.0	8.0	5.0	16.0
14	27	130	1.69	320.4	4.18	11.44	28	5.0	8.0	5.0	8.0
34	28	126	1.58	963.9	12.05	20.00	48	5.0	8.0	5.0	8.0
NOT RANKED:											
29	***	****						5.0	8.0	5.0	8.0
32	***	****						5.0		5.0	
	MEAN	569.	7.56	840.8	10.37	20.92	40.				
	LOW	126.	1.23	260.8	3.79	5.22	18.				
	LO QTR	381.	4.98	398.0	5.10	11.44	35.				
	MEDIAN	507.	5.95	774.9	8.74	20.00	40.				
	HI QTR	627.	8.39	1115.1	12.45	28.67	46.				
	HIGH	2546.	38.18	2516.1	31.89	49.55	59.				

TABLE IV.2 STORING - MOVING STOCK FROM RECEIVING TO STORAGE OR SELECTION SLOTS
PRODUCTIVTY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR DIRECT LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR DIR LABOR	MOVEMENT METHOD 1 LIFT HAULS AND STORES 2 TRANSPORTER HAULS LIFT STORES 3 AUTOMATED FROM DOCK LIFT STORES 4 TOTALLY AUTOMATED TRUCK	MOVEMENT METHOD PAIL	STORAGE LOCATION SELECTION	AISLE WIDTH (FT.)	STORAGE HEIGHT (FT.)	STORAGE CAPACITY UTILIZATION (%)	STORAGE DENSITY (UNITS PER SQ FOOT)
28	1	2546	2	2	SLOT 1ST THEN RESERVE	12.5	25.0	75.8	3.5
1	2	972	1	1	SLOT 1ST THEN RESERVE	12.0	20.0		
8	3	815	1	1	SLOT 1ST THEN RESERVE	7.5	16.0	54.4	2.3
16	4	814	1	1	ON-LINE COMPUTER	12.0	20.0	93.7	3.9
7	5	682	2		OTHER	12.0	26.0	100.2	6.5
37	6	673	1	1	SLOT 1ST THEN RESERVE		20.0	99.2	0.7
13	7	627	1	1	SLOT 1ST THEN RESERVE	10.0	16.0	97.0	1.3
20	8	607	1	1	SLOT 1ST THEN RESERVE	9.5	16.0	74.7	2.4
23	9	603	2	2	SLOT 1ST THEN RESERVE	10.0	16.0		2.3
31	10	597	1	1	SLOT 1ST THEN RESERVE	9.5	15.0	95.9	2.7
19	11	595	2	2	SLOT 1ST THEN RESERVE	12.0	32.0	106.9	4.0
18	12	585	2	1	SLOT 1ST THEN RESERVE	12.0	26.0	99.3	3.4
2	13	546	1	1	SLOT 1ST THEN RESERVE	10.0	17.0	98.8	7.1
11	14	507	1	1	SLOT 1ST THEN RESERVE	8.0	25.0	89.4	1.4
12	15	482	1	1	SLOT 1ST THEN RESERVE	11.5	18.0	79.1	3.5
36	16	447	2	2	ON-LINE COMPUTER	7.0	24.5	94.0	4.0
22	17	432	2	2	SLOT 1ST THEN RESERVE	15.0	18.0	99.2	1.9
10	18	428	1	1	SLOT 1ST THEN RESERVE	9.3	18.0		3.6
25	19	426	1	1	ON-LINE COMPUTER	11.3	24.0	70.7	2.6
3	20	417	2	2	SLOT 1ST THEN RESERVE	9.0	19.0	67.3	2.4
38	21	381	2	2	SLOT 1ST THEN RESERVE	10.0	17.0	83.7	3.2
21	22	363	2	2	SLOT 1ST THEN RESERVE	10.0	22.0	98.8	1.4
33	23	360	2	1	SLOT 1ST THEN RESERVE		18.0	89.9	3.2
30	24	342	1	1	SLOT 1ST THEN RESERVE	11.0	21.0	75.2	2.6
35	25	225	3	3	OTHER	11.5	25.5	87.8	3.9
4	26	193	2	2	SLOT 1ST THEN RESERVE	11.0	16.0	66.9	3.5
14	27	130	2	2	SLOT 1ST THEN RESERVE	12.0	12.0	100.0	2.1
34	28	126	1	1	SLOT 1ST THEN RESERVE	12.0	27.0		
NOT RANKED:									
29	***	****	1	1	SLOT 1ST THEN RESERVE	12.0	32.0	98.4	1.5
32	***	****	2	2	SLOT 1ST THEN RESERVE	12.0	16.5		
	MEAN	569.				10.8	20.6	87.8	3.0
	LOW	126.				7.0	12.0	54.4	0.7
	LO QTR	381.				10.0	16.5	75.2	2.1
	MEDIAN	507.				11.3	20.0	93.7	2.7
	HI QTR	627.				12.0	25.0	99.2	3.6
	HIGH	2546.				15.0	32.0	106.9	7.1

TABLE IV.3 STORING - MOVING STOCK FROM RECEIVING TO STORAGE OR SELECTION SLOTS
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR DIRECT LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR TOT LABOR	OUTSIDE STORAGE USED	PERFORMANCE STANDARDS			INCEN-TIVES	SHORT INTERVAL SCHED.	EMPLOYEES PER SUPER.	O/T HOURS (% OF TOTAL)
				STANDARDS	ENG. BASED	IN CONTRACT				
28	1	2546	NO	NO			NO	NO	31.8	8.9
1	2	972	NO	YES		YES	NO		15.0	6.4
8	3	815	NO	NO			NO	NO	12.8	0.0
16	4	814	NO	YES	YES	NO	NO	NO		3.6
7	5	682	NO	NO			NO			0.0
37	6	673	YES	NO			NO	NO		0.0
13	7	627	NO	NO			NO	NO	23.8	3.3
20	8	607	NO	NO			NO	NO	21.3	11.8
23	9	603	NO	YES	YES	NO	NO	NO	11.0	9.4
31	10	597	YES	YES		YES	YES	YES	81.7	2.9
19	11	595	YES	YES	YES	NO	NO		29.8	11.4
18	12	585	NO	NO			NO	NO	8.8	10.5
2	13	546	NO	YES	NO	NO	YES	NO	53.0	3.2
11	14	507	YES	YES	YES	NO	NO	YES		1.4
12	15	482	YES	NO			NO	YES	38.0	12.6
36	16	447	YES	YES	NO	NO	NO		27.5	1.2
22	17	432	NO	NO			NO		18.5	2.8
10	18	428	NO	YES	NO	NO	NO	NO	9.8	4.7
25	19	426	YES	NO			NO	YES	22.7	12.5
3	20	417	NO	NO			NO	NO	14.1	0.6
38	21	381	NO	YES	YES	NO	NO	NO	11.6	6.9
21	22	363	NO	NO			NO	NO	11.9	1.7
33	23	360	YES	NO			NO	YES	12.9	0.5
30	24	342	YES	NO			NO		24.1	8.5
35	25	225	YES	NO			NO			1.4
4	26	193	YES	NO			NO	NO		8.4
14	27	130	NO	NO			NO	NO	19.6	18.2
34	28	126	YES	YES	NO		NO	NO		26.1
NOT RANKED:										
29	***	****	YES	NO			NO	NO		
32	***	****	NO	NO			NO			
	MEAN	569.							23.8	6.4
	LOW	126.							8.8	0.0
	LO QTR	381.							11.9	1.4
	MEDIAN	507.							19.6	4.7
	HI QTR	627.							29.8	10.5
	HIGH	2546.							81.7	26.1

TABLES V.1 - V.3

REPLENISHMENT

Ranking: Replenishment data are ranked by the ratio of total cases moved from storage into selection slots to direct labor hours.

Planned and unplanned: Replenishment is subdivided into planned and unplanned. For 20 warehouses reporting these data, 31% of all replenishment was in response to order selector demand; i.e., was unplanned. As a result selection productivity was probably reduced somewhat. Overall 90% of all cases entering the sample warehouses were re-handled in a replenishment operation.

TABLE V.1

REPLENISHMENT - MOVING STOCK FROM STORAGE TO SELCTION SLOTS
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR DIRECT LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR DIR LABOR	TONS PER MAN-HOUR DIR LABOR	UNITS (X1000)	TONS (X1000)	PALLETS (X1000)	UNITS PER PALLET	OPER. SCHEDULE DAYS	OPER. SCHEDULE HOURS
1	1	1035	14.08	1138.1	15.49	27.91	41	5.0	15.0
3	2	824	10.36	380.0	4.78	10.86	35	5.0	8.0
22	3	722	7.71	453.5	4.84	10.76	42	5.0	8.0
13	4	589	5.92	189.0	1.90	4.41	43	5.0	12.0
18	5	581	3.38	649.6	3.78	18.74	35	5.0	12.0
23	6	581	5.84	395.5	3.97	9.81	40	5.0	8.0
30	7	554	7.47	372.4	5.03	9.31	40	5.0	9.0
20	8	500	5.68	938.0	10.65	25.61	37	5.0	8.0
21	9	483	4.96	403.4	4.15	8.72	46	5.0	8.0
12	10	425	6.06	873.6	12.45	22.40	39	5.0	24.0
8	11	408	5.95	130.4	1.91	2.61	50	5.0	8.0
28	12	405	6.07	1107.9	16.62	27.70	40	5.0	16.0
10	13	402	5.33	698.3	9.25	17.41	40	5.0	16.0
38	14	358	4.88	598.7	8.17	14.22	42	5.0	16.0
33	15	344	4.64	355.2	4.80	14.21	25	5.0	16.0
19	16	324		1249.2		31.23	40	5.0	24.0
31	17	305	4.14	932.9	12.64	20.73	45	6.0	21.3
36	18	255	0.46	1935.6	3.53	37.81	51	5.0	24.0
2	19	183	1.84	89.8	0.90	9.07	10	5.0	8.0
14	20	98	1.38	324.4	4.58	11.58	28	5.0	8.0
NOT RANKED:									
16	***	****						5.0	8.0
25	***	****				30.57		7.0	16.0
34	***	****						5.0	8.0
11	***	****						5.0	24.0
35	***	****				7.02		5.0	8.0
4	***	****						7.0	23.0
37	***	****						5.0	8.0
7	***	****							
29	***	****						5.0	8.0
32	***	****						5.0	
	MEAN	469.	5.59	660.8	6.81	16.75	38.		
	LOW	98.	0.46	89.8	0.90	2.61	10.		
	LO QTR	344.	4.14	372.4	3.78	9.81	37.		
	MEDIAN	425.	5.68	598.7	4.80	14.22	40.		
	HI QTR	581.	6.07	938.0	10.65	25.61	43.		
	HIGH	1035.	14.08	1935.6	16.62	37.81	51.		

TABLE V.2

REPLENISHMENT - MOVING STOCK FROM STORAGE TO SELECTION SLOTS
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR DIRECT LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR DIR LABOR	RATIO: UNITS REPLENISHED/ UNITS STORED	RATIO: SELECTOR CALLS /TOT REPLENISH	REPLENISH METHOD	SLOTTING PRIORITIES A-FAM. GROUP B-MIN. DAMAGE C-MAX. CUBE LOADS D-MAX. HIT FREQ. E-MIN. REPLENISHMENT HANDLING F-SAFETY G-DOCK PROXIMITY H-MAX. STORAGE USE							
						1	2	3	4	5	6	7	8
1	1	1035	0.90	0.00	OPER JUDGE	A	D	F	B	C	E	H	G
3	2	824	0.95	0.00	OPER JUDGE	F	B	G	E	C	H	D	A
22	3	722	1.24	0.50	OPER JUDGE	F	B	E	A	C	G	H	D
13	4	589	0.68	0.00	OPER JUDGE	E	D	H	G	A	F	C	B
18	5	581	0.91	0.74	OPER JUDGE	A	H	E	C	B	F	D	G
23	6	581	1.03	0.30	OPER JUDGE	A	B	D	C	E	G	F	H
30	7	554	0.63	0.00	OPER JUDGE	E	H	C	G	B	F	D	A
20	8	500	1.01	0.10	OPER JUDGE	D	C	A	E	H	F	G	B
21	9	483	1.33	0.50	OPER JUDGE	F	B	E	A	C	G	H	D
12	10	425	1.04	0.50	OPER JUDGE	A	C	H	F	E	G	B	D
8	11	408	0.50	0.30	OPER JUDGE	D	E	G	H	A	C	F	B
28	12	405	0.99	0.30	OPER JUDGE	D	G	H	C	F	A	B	F
10	13	402	0.75	0.08	OPER JUDGE	A	H	D	C	G	F	B	E
38	14	358	1.00	0.22	OPER JUDGE	D	F	C	A	B	E	H	G
33	15	344	0.96	0.76	SEL CALL	C	E	B	A	H	D	F	G
19	16	324	1.00	0.67	OPER JUDGE	H	G	D	A	F	B	E	C
31	17	305	1.07	0.00	OPER JUDGE	B	H	E	F	D	C	G	A
36	18	255	0.77	0.14	COMP SCHED								
2	19	183	0.17	1.00	OPER JUDGE	D	G	F	E	C	H	A	B
14	20	98	1.01	0.00	OPER JUDGE	A	D	E	F	B	C	G	H
NOT RANKED:													
16	***	****			COMP SCHED	A	D	H	C	E	F	B	G
25	***	****			COMP SCHED	H	C	D	B	A	E	F	G
34	***	****			OPER JUDGE	A	B	C	E	F	G	D	H
11	***	****			OPER JUDGE	F	B	G	C	E	H	A	D
35	***	****			OPER JUDGE	H	B	F	D	C	E	A	G
4	***	****			OPER JUDGE	C	H	E	B	D	G	A	F
37	***	****			OPER JUDGE	G	E	A	H	C	D	F	B
7	***	****			OPER JUDGE	A	B	G	E	H	F	C	D
29	***	****			OPER JUDGE	E	D	F	B	G	C	A	H
32	***	****			OPER JUDGE	G	E	H	C	F	B	A	D
	MEAN	469.	0.90	0.31									
	LOW	98.	0.17	0.00									
	LO QTR	344.	0.77	0.00									
	MEDIAN	425.	0.99	0.30									
	HI QTR	581.	1.03	0.50									
	HIGH	1035.	1.33	1.00									

TABLE V.3

REPLENISHMENT - MOVING STOCK FROM STORAGE TO SELECTION SLOTS
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR DIRECT LABOR

DRY GROCERY

IDENT	RANK	UNITS PER MAN-HOUR DIR LABOR	PERFORMANCE STANDARDS			INCEN-TIVES	SHORT INTERVAL SCHED.	EMPLOYEES PER SUPER	O/T HOURS (% OF TOTAL)
			STANDARDS	ENG. BASED	IN CONTRACT				
1	1	1035	YES		YES	NO		15.0	21.3
3	2	824	NO			NO	NO	14.1	0.9
22	3	722	NO			NO		18.5	0.6
13	4	589	NO			NO	NO	23.8	7.6
18	5	581	NO			NO	NO	8.8	10.8
23	6	581	YES	YES	NO	NO	NO	11.0	9.7
30	7	554	NO			NO		24.1	28.6
20	8	500	NO			NO	NO	21.3	16.3
21	9	483	NO			NO	NO	11.9	1.0
12	10	425	NO			NO	YES	38.0	12.2
8	11	408	NO			NO	NO	12.8	0.0
28	12	405	NO			NO	NO	31.8	8.8
10	13	402	YES	NO	NO	NO	NO	9.8	4.3
38	14	358	YES	YES	NO	NO	NO	11.6	5.5
33	15	344	NO			NO	YES	12.9	18.4
19	16	324	YES	YES	NO	NO		29.8	10.9
31	17	305	YES		YES	YES	YES	81.7	7.0
36	18	255	YES	NO	NO	NO		27.5	4.9
2	19	183	YES	NO	NO	YES	NO	53.0	2.8
14	20	98	NO			NO	NO	19.6	9.3
NOT RANKED:									
16	***	****	YES	YES	NO	NO	NO		
25	***	****	NO			NO	YES	22.7	12.6
34	***	****	YES	NO		NO	NO		
11	***	****	YES	YES	NO	NO	YES		3.7
35	***	****	NO			NO			
4	***	****	NO			NO	NO		
37	***	****	NO			NO	NO		
7	***	****	NO			NO			
29	***	****	NO			NO	NO		
32	***	****	NO			NO			
	MEAN	469.						23.8	8.9
	LOW	98.						8.8	0.0
	LO QTR	344.						11.9	3.7
	MEDIAN	425.						19.6	8.8
	HI QTR	581.						29.8	12.6
	HIGH	1035.						81.7	28.6

TABLES VI.1 - VI.4

ORDER SELECTION

Ranking: Order selection data are ranked by the ratio of total cases selected to direct labor hours.

Level of Mechanization: Two mechanized warehouses are included in the rankings. They may be identified by the column heading, "Percent of Total Cases Selected Conventionally" in Table VI.1. Care must be used when selecting "like" warehouses for comparison to take account of different levels of mechanization.

Selection and Shipping: Allocation of time between selection and shipping can be difficult. In this sample order selectors loaded into trailers on average 48.9% of the cases selected indicating a significant amount of overlap across functions. Warehouse cutoffs averaged 4.3% of cases shipped.

TABLE VI.1

ORDER SELECTION
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR DIRECT LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR DIR LABOR	TONS PER MAN-HOUR DIR LABOR	UNITS (X1000)	TONS (X1000)	OPER. SCHEDULE DAYS	OPER. SCHEDULE HOURS	SLOT TYPE	% OF TOTAL CASES SELECTED CONVENTIONALLY
30	1	244	3.30	664.7	8.97	5.0	9.0	FIXED	100.0
35	2	227	2.66	868.9	10.17	7.0	13.7	FIXED	100.0
7	3	227	3.63	591.7	9.47	5.0	8.0	FIXED	100.0
36	4	221	0.40	2093.5	3.82	5.0	16.0	FIXED	
25	5	216	2.53	1873.3	21.90	7.0	16.0	FIXED	100.0
18	6	201	1.17	1196.7	6.95	5.0	12.0	FIXED	44.0
21	7	191	1.96	403.4	4.15	5.0	8.0	FIXED	100.0
23	8	181	1.82	562.1	5.65	5.0	8.0	FIXED	100.0
29	9	180	2.91	635.1	10.25	5.0	16.0	FIXED	100.0
22	10	177	1.89	453.5	4.84	5.0	8.0	FIXED	100.0
33	11	162	2.19	367.1	4.96	6.0	8.0	FIXED	100.0
19	12	161		1249.2		5.0	16.0	FIXED	100.0
31	13	161	2.18	904.1	12.25	6.0	14.7	FIXED	100.0
3	14	151	1.90	439.4	5.53	5.0	8.0	FIXED	100.0
20	15	148	1.69	1127.3	12.80	5.0	8.0	FIXED	100.0
28	16	142	2.14	1107.9	16.62	5.0	16.0	FIXED	100.0
1	17	141	1.91	899.6	12.24	5.0	15.0	FLOATING	100.0
8	18	140	2.05	272.1	3.98	5.0	8.0	FIXED	100.0
2	19	140	1.41	529.8	5.33	5.0	8.0	FIXED	100.0
12	20	139	1.98	873.6	12.45	5.0	24.0	FIXED	100.0
10	21	136	1.79	1057.0	14.00	5.0	8.0	FIXED	
4	22	131	1.75	877.7	11.72	7.0	19.7	FIXED	94.4
37	23	127		1373.1		5.0	8.0	FIXED	100.0
16	24	124	1.76	851.4	12.05	5.0	8.0	FIXED & FLOAT.	100.0
38	25	118	1.61	602.0	8.21	5.0	8.0	FIXED	100.0
13	26	115	1.15	423.3	4.26	5.0	12.0	FIXED	100.0
14	27	104	1.47	1144.0	16.15	5.0	8.0	FIXED	100.0
32	28	99	1.35	445.7	6.07	5.0		FIXED	100.0
NOT RANKED:									
11	***	****	6.23	1433.8	18.39	6.0	24.0	FIXED	100.0
34	***	****				5.0	8.0	FIXED	100.0
	MEAN	161.	1.95	853.1	9.41				97.8
	LOW	99.	0.40	272.1	3.82				44.0
	LO QTR	136.	1.61	529.8	5.33				100.0
	MEDIAN	151.	1.90	868.9	9.47				100.0
	HI QTR	191.	2.19	1127.3	12.45				100.0
	HIGH	244.	3.63	2093.5	21.90				100.0

TABLE VI.2

ORDER SELECTION
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR DIRECT LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR DIR LABOR	PERCENT LOADED BY SELECTORS	SELECTION DOCUMENTS SLOT SEQ.	SELECTION DOCUMENTS CASE LABELS	BATCH PICK	MAXIMUM BATCH	BULK SELECTOR	MIN. BULK QUANTITY	WAREHOUSE CUTOFFS (%)
30	1	244	0.0	YES	YES			YES	PALLET	
35	2	227	0.0	YES	YES			YES	25	
7	3	227	100.0	YES	YES			NO		0.04
36	4	221		YES	YES			YES	PALLET	0.29
25	5	216	90.0	YES	YES			NO		0.18
16	6	201	0.0	YES	NO			NO		5.85
21	7	191	18.0	YES	YES			NO		8.93
23	8	181	80.0	YES	YES			NO		5.26
29	9	180	90.0	YES	YES	YES	4	NO		9.83
22	10	177	86.0	YES	YES			NO		9.71
33	11	162	31.0	YES	YES			NO		0.43
19	12	161		YES	NO			NO		0.75
31	13	161	0.0	YES	YES			YES	15	0.30
3	14	151	0.0	YES	YES			NO		8.26
20	15	148	50.0	YES	YES			YES	PALLET	11.68
28	16	142	0.0	YES	NO			NO		0.15
1	17	141	15.0	YES	NO			NO		7.92
8	18	140	45.0	YES	YES			NO		7.00
2	19	140	75.0	YES	YES			NO		6.44
12	20	139	50.0	YES	YES			YES	25	0.29
10	21	136	30.0	YES	YES			NO		
4	22	131	0.0	YES	YES			NO		0.14
37	23	127	100.0	YES	NO			NO		
16	24	124	90.0	YES	YES			NO		0.26
38	25	118	65.0	YES	YES			NO		6.79
13	26	115	95.0	YES	YES			NO		5.17
14	27	104	80.0	YES	YES			NO		11.17
32	28	99	0.0	YES	YES			NO		0.03
NOT RANKED:										
11	***	****	80.0	YES	YES			YES	15	
34	***	****	100.0	YES	YES			YES	20	0.00
	MEAN	161.	48.9				4.		20.	4.28
	LOW	99.	0.0				4.		15.	0.00
	LO QTR	136.	0.0				4.		15.	0.18
	MEDIAN	151.	50.0				4.		20.	5.17
	HI QTR	191.	90.0				4.		25.	8.26
	HIGH	244.	100.0				4.		25.	11.68

TABLE VI.3

ORDER SELECTION
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY "UNITS PER MAN-HOUR DIRECT LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR DIR LABOR	ITEMS SEGREGATED: FAST MOVERS	ITEMS SEGREGATED: SLOW MOVERS	AISLE WIDTH	SELECTION AREA STORAGE HEIGHT	PERFORMANCE STANDARDS: STANDARDS	PERFORMANCE STANDARDS: ENG. BASED	PERFORMANCE STANDARDS: IN CONTRACT	INCENTIVES
30	1	244	YES	YES	9.0		YES			YES
35	2	227	YES	YES	11.5	25.5	YES			YES
7	3	227	YES	YES	12.0	21.0	YES			NO
36	4	221	YES	NO	11.5	14.0	YES	YES	NO	NO
25	5	216	NO	NO	11.3	24.0	YES	YES	NO	YES
18	6	201	NO	NO	12.0	17.0	YES	YES	NO	NO
21	7	191	YES	YES	10.0	20.0	YES	YES	NO	NO
23	8	181	YES	YES	10.0	16.0	YES	YES	NO	NO
29	9	180	YES	YES	12.0	22.0	YES	YES	NO	NO
22	10	177	YES	YES	10.0	17.0	YES	YES	NO	NO
33	11	162	YES	YES	12.0	18.0	YES			YES
19	12	161	YES	YES	12.5	25.0	YES	YES	NO	NO
31	13	161	YES	YES	9.5	17.0	YES		YES	YES
3	14	151	YES	YES	9.0	19.0	YES	YES	NO	NO
20	15	148	YES	YES	9.5	16.0	YES	YES	NO	NO
28	16	142	YES	YES	12.5	25.0	YES	YES	NO	NO
1	17	141	NO	NO	12.0	16.0	YES		YES	NO
6	18	140	YES	YES	7.5	9.0	YES	YES	NO	NO
2	19	140	YES	YES	10.0	17.0	YES	YES	NO	YES
12	20	139	NO	YES	11.5	18.0	YES		NO	NO
10	21	136	YES	YES	9.3	8.8	YES	YES	NO	NO
4	22	131	YES	YES	11.0	19.5	YES	YES		NO
37	23	127	NO	NO		22.0	YES	YES	NO	YES
16	24	124	YES	YES	12.0	20.0	YES	YES	NO	NO
38	25	118	YES	YES	10.0	17.0	YES	YES	NO	NO
13	26	115	YES	NO	10.0	16.0	YES	YES	NO	NO
14	27	104	YES	NO	12.0	18.0	YES	YES	NO	NO
32	28	99	YES	YES	9.5	22.0	YES		NO	NO
NOT RANKED:										
11	***	****	YES	YES	10.0	28.0	YES	YES	NO	NO
34	***	****	YES	YES	12.0	27.0	YES	NO		YES
MEAN		161.			10.7	19.1				
LOW		99.			7.5	8.8				
LO QTR		136.			9.5	16.0				
MEDIAN		151.			11.0	18.0				
HI QTR		191.			12.0	22.0				
HIGH		244.			12.5	28.0				

TABLE VI.4

ORDER SELECTION
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR DIRECT LABOR

DRY GROCERY

IDENT	RANK	UNITS PER MAN-HOUR DIR LABOR	SHORT INTERVAL SCHED.	EMPLOYEES PER SUPER.	O/T HOURS (% OF TOTAL)
30	1	244		7.6	15.6
35	2	227		10.6	1.7
7	3	227		16.3	1.8
36	4	221		29.7	2.9
25	5	216	YES	2.9	29.9
18	6	201	YES	16.8	5.1
21	7	191	YES	15.1	1.9
23	8	181	YES	18.5	7.6
29	9	180	YES	8.8	10.2
22	10	177		19.7	0.4
33	11	162	YES	28.3	8.6
19	12	161		12.1	14.2
31	13	161	YES	67.1	6.6
3	14	151	YES	29.0	1.3
20	15	148	YES	31.6	16.2
28	16	142	YES	25.9	7.7
1	17	141		40.0	8.3
8	18	140	YES	10.8	0.0
2	19	140	YES	172.0	1.5
12	20	139	YES	24.2	8.9
10	21	136	YES	16.3	3.4
4	22	131	YES	27.7	9.2
37	23	127	YES	16.9	15.0
16	24	124	YES		16.2
38	25	118	YES	23.2	7.0
13	26	115	YES	24.6	21.9
14	27	104	YES	68.9	3.6
32	28	99		22.6	9.8
NOT RANKED:					
11	***	****	YES	3.1	21.3
34	***	****	YES		
	MEAN	161.		28.2	8.9
	LOW	99.		2.9	0.0
	LO QTR	136.		15.1	1.9
	MEDIAN	151.		22.6	7.7
	HI QTR	191.		29.0	15.0
	HIGH	244.		172.0	29.9

TABLES VII.1 - VII.6

SHIPPING

Ranking: Shipping data are ranked by the ratio of total cases selected to total labor hours (direct and checking).

TABLE VII.1

SHIPPING PREPARATION
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT	RANK	UNITS PER MAN-HOUR TOT LABOR	TONS PER MAN-HOUR TOT LABOR	UNITS PER MAN-HOUR DIR LABOR	TONS PER MAN-HOUR DIR LABOR	UNITS (X1000)	TONS (X1000)	OPER. SCHEDULE DAYS	OPER. SCHEDULE HOURS
25	1	1419	16.59	1703	19.90	1873.3	21.90	7.0	24.0
13	2	1411	14.67	1574	16.36	409.6	4.26	5.0	12.0
8	3	1308	19.11	1619	23.66	272.1	3.98	5.0	8.0
21	4	1016	10.44	1070	11.00	403.4	4.15	5.0	8.0
28	5	959	14.39	959	14.39	1107.9	16.62	5.0	16.0
7	6	954	15.27	954	15.27	591.7	9.47	5.0	8.0
31	7	878	11.90	917	12.43	904.1	12.25	6.0	14.7
38	8	875	11.93	875	11.93	602.0	8.21	5.0	8.0
20	9	840	11.47	935	12.76	938.0	12.80	5.0	8.0
10	10	798	10.56	828	10.97	1057.0	14.00	5.0	8.0
3	11	765	10.60	765	10.60	398.7	5.53	5.0	8.0
19	12	725		725		1249.2		5.0	16.0
4	13	622	6.20	622	6.20	1186.8	11.83	7.0	19.7
32	14	619	8.43	619	8.43	445.7	6.07	5.0	
2	15	594	5.97	828	8.32	529.8	5.33	5.0	8.0
12	16	545	7.76	729	10.39	873.6	12.45	5.0	24.0
23	17	433	4.35	867	8.72	562.1	5.65	5.0	8.0
22	18	427	5.49	519	6.67	376.8	4.84	5.0	8.0
33	19	408	5.50	515	6.96	367.1	4.96	6.0	8.0
18	20	326	1.90	326	1.90	1196.7	6.95	5.0	12.0
36	21	280	0.45	285	0.46	2380.1	3.82	5.0	16.0
1	22	249	3.38	302	4.10	908.4	12.30	5.0	15.0
11	23	138	1.92	143	1.98	1386.8	19.28	6.0	24.0
14	24	101	1.42	102	1.44	1144.0	16.15	5.0	8.0
NOT RANKED:									
29	***	****				635.1		5.0	8.0
35	***	****						7.0	13.7
16	***	****				851.4	12.05	5.0	8.0
30	***	****						5.0	9.0
37	***	****						5.0	8.0
34	***	****				566.8	7.09	5.0	8.0
	MEAN	695.	8.68	783.	9.78	881.9	9.69		
	LOW	101.	0.45	102.	0.46	272.1	3.82		
	LO QTR	427.	4.35	519.	6.20	445.7	4.96		
	MEDIAN	725.	8.43	828.	10.39	904.1	8.21		
	HI QTR	954.	11.93	954.	12.76	1186.8	12.80		
	HIGH	1419.	19.11	1703.	23.66	2380.1	21.90		

TABLE VII.2

SHIPPING PREPARATION
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR TOT LABOR	PERCENT LOADED BY SELECTORS	SHIPPING DOCK						
				LENGTH (FT)	DEPTH (FT)	% OF WAREHOUSE AREA	DOORS	UNITS PER DOOR-HOUR	TONS PER DOOR-HOUR	USED FOR STORAGE
25	1	1419	90.0	648	27	4.84	53	53	0.61	NO
13	2	1411	95.0	140	49	5.36	13	131	1.36	NO
8	3	1308	45.0	120	20	2.86	14	121	1.77	NO
21	4	1016	18.0	150	10	0.86	6	420	4.32	NO
28	5	959	0.0	370	45	4.86	29	119	1.79	NO
7	6	954	100.0	200	40	8.00	12	308	4.93	NO
31	7	878	0.0	396	56	11.44	16	160	2.17	NO
38	8	875	65.0	143	41	2.80	11	342	4.66	NO
20	9	840	50.0	189	27	2.03	16	366	5.00	NO
10	10	798	30.0	336	48	6.01	33	200	2.65	NO
3	11	765	0.0	204	15	1.80	16	156	2.16	NO
19	12	725		848	40	10.20	45	87		NO
4	13	622	0.0	336	46	8.02	19	113	1.13	YES
32	14	619	0.0	230	36	5.00	13			NO
2	15	594	75.0	150	10	5.00	8	414	4.16	YES
12	16	545	50.0	333	38	8.50	24	76	1.08	YES
23	17	433	80.0	200	40	3.78	14	251	2.52	NO
22	18	427	86.0	141	15	1.80	5	471	6.05	NO
33	19	408	31.0	425	40	13.39	26	74	0.99	NO
18	20	326	0.0	180	25	1.87	16	312	1.81	NO
36	21	280		625	60	7.15	40	186	0.30	NO
1	22	249	15.0	345	60	5.91	24	126	1.71	NO
11	23	138	80.0	376	42	4.51	30	80	1.12	NO
14	24	101	80.0				19	376	5.31	NO
NOT RANKED:										
29	***	****	90.0	200	40	4.73	7	567		YES
35	***	****	0.0	168	50	3.73	14			NO
16	***	****	90.0	401	31	4.76	34	157	2.22	YES
30	***	****	0.0	270	50	4.96	21			NO
37	***	****	100.0	800	50	10.00	35			NO
34	***	****	100.0	200	40		28	127	1.58	NO
	MEAN	695.	48.9	315.	38.	5.51	21.	223.	2.56	
	LOW	101.	0.0	120.	10.	0.86	5.	53.	0.30	
	LO QTR	427.	0.0	168.	27.	3.73	13.	119.	1.36	
	MEDIAN	725.	50.0	230.	40.	4.96	19.	160.	2.16	
	HI QTR	954.	90.0	396.	49.	8.00	30.	366.	4.32	
	HIGH	1419.	100.0	848.	60.	13.39	53.	567.	6.05	

TABLE VII.3

SHIPPING PREPARATION
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR TOT LABOR	SHIP & RECEIVE SAME DOCK	SHIP & RECEIVE SAME TIME	OUT OF TRAILERS	CHECKING METHOD
25	1	1419	YES	YES	MONTHLY	SPOT
13	2	1411	YES	NO	WEEKLY	OTHER
8	3	1308	NO		DAILY	SPOT
21	4	1016	NO		NEVER	SPOT
28	5	959	NO		NEVER	ITEM
7	6	954	NO		MONTHLY	SPOT
31	7	878	YES	NO	WEEKLY	NONE
38	8	875	NO		WEEKLY	ITEM
20	9	840	YES	YES	DAILY	ITEM
10	10	798	NO		MONTHLY	ITEM
3	11	765	NO		NEVER	OTHER
19	12	725	YES	NO	MONTHLY	ITEM
4	13	622	YES	NO	DAILY	NONE
32	14	619	YES	NO	MONTHLY	SPOT
2	15	594	NO		NEVER	SPOT
12	16	545	YES	NO	WEEKLY	NONE
23	17	433	NO		WEEKLY	SPOT
22	18	427	NO		NEVER	SPOT
33	19	408	YES	NO	WEEKLY	SPOT
18	20	326	NO		WEEKLY	OTHER
36	21	280	YES	YES	NEVER	SPOT
1	22	249	NO		DAILY	SPOT
11	23	138	YES	NO	DAILY	SPOT
14	24	101	NO		DAILY	SPOT
NOT RANKED:						
29	***	****	NO		DAILY	NONE
35	***	****	NO		NEVER	ITEM
16	***	****	NO		MONTHLY	OTHER
30	***	****	NO		WEEKLY	COUNT
37	***	****	NO		WEEKLY	ITEM
34	***	****	YES	NO	MONTHLY	SPOT

MEAN	695.
LOW	101.
LO QTR	427.
MEDIAN	725.
HI QTR	954.
HIGH	1419.

TABLE VII.4

SHIPPING PREPARATION
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR TOT LABOR	PERCENT UNITIZED	LOADING UNIT (% OF TOTAL CASES)					PERCENT OF LOADS CONTAINING			
				CARTS	PALLETS	CAGES	DEADPILE	RELAY BOARDS	ONE ORDER	TWO ORDERS	THREE ORDERS	MORE THAN 3 ORDERS
25	1	1419	100.0		57.0	43.0			97.7	2.3	0.0	
13	2	1411	97.8		100.0				58.4	41.6		
8	3	1308	95.0		100.0				82.2	17.8		
21	4	1016	90.0		90.0		10.0		36.5	57.4	6.0	
28	5	959	100.0		100.0				83.7	14.3	2.0	
7	6	954	100.0		100.0				100.0			
31	7	878	100.0	3.7	96.3				85.0	13.6	0.9	0.5
38	8	875	99.5	7.0	88.2		4.8		84.2	15.5	0.3	
20	9	840	70.0		90.0		10.0		88.2	11.8		
10	10	798	100.0		100.0				45.2	50.7	3.9	0.2
3	11	765	100.0		100.0				38.0	59.9	2.2	
19	12	725	100.0		100.0				97.7	1.5	0.8	
4	13	622	100.0		100.0				58.7	23.4	9.7	8.2
32	14	619	100.0		64.0		36.0		50.1	41.2	5.5	3.1
2	15	594	73.6		75.0		25.0		59.9	39.6	0.5	
12	16	545	100.0		100.0				97.4	2.5	0.1	
23	17	433	80.0		100.0				64.7	32.5	0.5	2.3
22	18	427	91.6		93.0		7.0		59.3	39.7	1.0	
33	19	408	100.0	32.0	68.0				58.3	20.0	2.6	19.1
18	20	326	40.4		75.0		25.0		44.2	54.3	0.9	0.7
36	21	280	68.0						74.2	24.6	1.2	
1	22	249	100.0		100.0				87.7	12.3		
11	23	138	95.5		95.5		4.5		72.2	14.0	8.5	5.3
14	24	101	100.0		100.0				76.9	18.8	3.1	1.2
NOT RANKED:												
29	***	****	100.0						100.0			
35	***	****			100.0				68.2	26.5	5.2	0.1
16	***	****	100.0		100.0				63.3	33.9	2.8	
30	***	****			7.5		92.5		24.4	26.7	24.8	24.2
37	***	****			100.0				84.0	16.0		
34	***	****	100.0	23.1	76.9							
	MEAN	695.	92.6	2.4	88.4	1.5	7.7	0.0	70.4	24.6	2.8	2.2
	LOW	101.	40.4	0.0	7.5	0.0	0.0	0.0	24.4	0.0	0.0	0.0
	LO QTR	427.	91.6	0.0	88.2	0.0	0.0	0.0	58.3	12.3	0.0	0.0
	MEDIAN	725.	100.0	0.0	100.0	0.0	0.0	0.0	72.2	20.0	0.9	0.0
	HI QTR	954.	100.0	0.0	100.0	0.0	7.0	0.0	87.7	39.7	3.9	1.2
	HIGH	1419.	100.0	32.0	100.0	43.0	92.5	0.0	100.0	59.9	24.8	24.2

TABLE VII.5

SHIPPING PREPARATION
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR TOT LABOR	CUSTOMER PROFILE									
			CORP. SUPERMKT		COOP. SUPERMKT		VOLUN. SUPERS		INDEP. SUPERS		NON-SUPERMKT	
			AVG. ORDER SIZE	% OF TOTAL UNITS	AVG. ORDER SIZE	% OF TOTAL UNITS	AVG. ORDER SIZE	% OF TOTAL UNITS	AVG. ORDER SIZE	% OF TOTAL UNITS	AVG. ORDER SIZE	% OF TOTAL UNITS
25	1	1419	612	100								
13	2	1411	1100	100								
8	3	1308	1046	100								
21	4	1016	1073	100								
26	5	959	1358	100								
7	6	954	1136	100								
31	7	878	1196	100								
38	8	875	975	100								
20	9	840	1198	100								
10	10	796	985	100								
3	11	765	1046	100								
19	12	725	812	97							346	3
4	13	622	751	29	712	51			1151	19	91	1
32	14	619	722	56			618	27	363	8	281	9
2	15	594	1265	100								
12	16	545	1092	100								
23	17	433	1106	100								
22	18	427	1069	100								
33	19	408	727	26			574	36	491	25	75	14
18	20	326	873	100								
36	21	280										
1	22	249	4367	100								
11	23	138	5547	100								
14	24	101	922	100								
NOT RANKED:												
29	***	****	1043	100								
35	***	****					3206	100				
16	***	****	925	100								
30	***	****										
37	***	****	1228	100								
34	***	****										
	MEAN	695.	1314.	93.	712.	51.	1466.	54.	668.	17.	198.	7.
	LOW	101.	612.	26.	712.	51.	574.	27.	363.	8.	75.	1.
	LO QTR	427.	922.	100.	712.	51.	574.	27.	363.	8.	91.	3.
	MEDIAN	725.	1069.	100.	712.	51.	618.	36.	491.	19.	281.	9.
	HI QTR	954.	1198.	100.	712.	51.	3206.	100.	1151.	25.	346.	14.
	HIGH	1419.	5547.	100.	712.	51.	3206.	100.	1151.	25.	346.	14.

TABLE VII.6

SHIPPING PREPARATION
PRODUCTIVITY AND OPERATING CHARACTERISTICS
RANKED BY UNITS PER MAN-HOUR TOTAL LABOR

DRY GROCERY

IDENT.	RANK	UNITS PER MAN-HOUR TOT LABOR	PERFORMANCE STANDARDS			INCENTIVES	SHORT INTERVAL SCHED.	EMPLOYEES PER SUPER.	O/T HOURS (% OF TOTAL)
			STANDARDS	ENG. BASED	IN CONTRACT				
25	1	1419	NO			NO	NO	2.5	0.0
13	2	1411	NO			NO	NO	9.1	21.4
8	3	1308	NO			NO	NO	1.2	0.0
21	4	1016	NO			NO	NO	6.6	2.5
28	5	959	YES	YES	NO	NO	NO	7.2	8.7
7	6	954	NO			NO			0.0
31	7	878	YES		YES	YES	YES	6.0	7.8
38	8	875	YES	YES	NO	NO	NO	3.8	7.6
20	9	840	NO			NO	NO	7.0	20.0
10	10	798	NO			NO	NO	4.1	5.0
3	11	765	NO			NO	NO	2.6	2.7
19	12	725	YES		NO	NO		3.6	13.5
4	13	622	YES	NO		NO	NO	3.9	10.8
32	14	619	NO			NO		6.0	6.1
2	15	594	YES	NO	NO	YES	NO	44.6	3.5
12	16	545	NO			NO	YES	4.5	16.0
23	17	433	NO			NO	NO	7.9	7.9
22	18	427	NO			NO		5.5	1.2
33	19	408	NO			NO	YES	5.6	14.5
18	20	326	NO			NO	NO	11.1	7.5
36	21	280	YES	NO	NO	NO		6.6	4.2
1	22	249	YES		YES	NO		22.8	6.8
11	23	138	YES	YES	NO	NO	YES		1.3
14	24	101	NO			NO	NO	64.5	1.8
NOT RANKED:									
29	***	****	NO			NO	NO		
35	***	****	NO			NO			
16	***	****	YES	NO	NO	NO	NO		
30	***	****	NO			NO			
37	***	****	YES	YES	NO	NO	NO		
34	***	****	YES	YES		NO	NO		
	MEAN	695.						10.8	7.1
	LOW	101.						1.2	0.0
	LO QTR	427.						3.9	2.5
	MEDIAN	725.						6.0	6.8
	HI QTR	954.						9.1	10.8
	HIGH	1419.						64.5	21.4